## LISTING OF CLAIMS

1. (Currently amended) A microfluidic device for processing a particle-containing liquid, comprising:

an enrichment zone to prepare an enriched particle sample from the particle-containing liquid, the enrichment zone comprising a flow-through member configured to allow liquid of the particle-containing liquid to pass along a first pathway through the flow-through member while retaining particles of the particle-containing liquid in the enrichment zone;

a lysing zone disposed downstream of the enrichment zone;

a detection zone disposed downstream of the enrichment zone;

a ~~second, different~~ second pathway spaced apart from the flow-through member and leading downstream from the enrichment zone; and

a gas actuator to move the enriched particle sample downstream from the enrichment zone along the second pathway, the enriched particle sample comprising at least some of the retained particles.

2. (Currently amended) The microfluidic device of claim 1, wherein the device comprises a substantially planar substrate, the substrate at least in part defining the enrichment zone and the ~~channel,~~ second pathway, the first pathway being generally perpendicular to a plane of the substrate, the second pathway being generally parallel to the plane of the substrate.

3. (Previously presented) The microfluidic device of claim 2, wherein the flow-through member sieves particles from the particle-containing fluid.

4. (Canceled)

5. (Currently Amended) The microfluidic device of claim 1 further comprising a first valve for coupling the enrichment zone to the ~~downstream region.~~ second pathway.

6. (Original) The microfluidic device of claim 5 further comprising a second valve for coupling the enrichment zone to the gas actuator.

7. (Original) The microfluidic device of claim 6, wherein the device moves the enriched particle sample from the enrichment zone to the downstream region by opening the first and second valves and actuating the gas actuator to thereby increase a gas pressure within the enrichment channel relative to a gas pressure within the downstream region.

8. (Original) The microfluidic device of claim 7, wherein the device comprises a substrate and the enrichment zone, downstream region, first valve, second valve, and gas actuator are integral with the substrate.

9. (Currently amended) The microfluidic device of claim [[4,]] 1, wherein the gas actuator decreases a gas pressure within the ~~downstream region~~ second pathway relative to a gas pressure of the enrichment zone.

10. (Currently amended) The microfluidic device of claim 9, wherein the device comprises a substrate and the enrichment zone and the gas actuator are integral with the substrate.

11. (Currently amended) The microfluidic device of claim [[4,]] 1, ~~wherein the downstream region comprises~~ further comprising a mixing zone configured to combine a predetermined portion of the enriched particle sample with a predetermined amount of a reagent.

12. (Previously presented) The microfluidic device of claim 11, wherein the mixing zone is configured to only combine less than about 50% of the enriched particle sample received by the downstream region with the predetermined amount of reagent.

13. (Canceled).

14. (Currently amended) The microfluidic device of claim [[1,,]] 1, wherein the lysing zone comprises a source of electrical energy to lyse the cells.

15. (Previously presented) The microfluidic device of claim 1, wherein said lysing zone includes a positioning element to position the enriched particle sample in a lysing position with respect to the lysing zone.

16. (Original) The microfluidic device of claim 1, wherein the device comprises a DNA manipulation zone configured to subject the enriched particle sample and reagent to polymerase chain reaction to provide amplified polynucleotides.

17. (Currently amended) The microfluidic device of claim 15, wherein the device comprises a ~~substrate~~ substrate, and wherein the enrichment zone ~~and polymerase chain reaction zone are~~ is integral with the substrate.

18. (Previously presented) The microfluidic device of claim 1, further comprising a particle-containing fluid source channel in fluid communication with the enrichment zone.

19. (Previously presented) A microfluidic device for processing a particle containing liquid, comprising:

an enrichment zone configured to substantially separate an enriched particle sample from the particle-containing liquid;

a lysing zone disposed downstream of the enrichment zone;

a detection zone disposed downstream of the enrichment zone;

an actuator to move the enriched particle sample downstream from the enrichment zone with essentially no dilution of the enriched particle sample.

20. (Previously presented) The microfluidic device of claim 19, wherein the device comprises a partition member in liquid communication with the enrichment channel, the partition member configured to substantially prevent passage of particles of the particle-containing fluid while allowing liquid of the particle-containing fluid to exit the enrichment zone.

21. (Previously presented) The microfluidic device of claim 19, wherein the partition member sieves particles from the particle-containing liquid.

22. (Canceled)

23. (Currently amended) The microfluidic device of claim [[21]] 19 further comprising a valve for coupling the enrichment zone to the ~~downstream region.~~ lysing zone.

24. (Previously presented) The microfluidic device of claim 23, wherein the device moves the enriched particle sample from the enrichment zone to the downstream region by opening the valve and actuating the actuator.

25. (Original) The microfluidic device of claim 23, wherein the device comprises a substrate and the enrichment channel, downstream region, valve and actuator are integral with the substrate.

26. (Original) The microfluidic device of claim 23, wherein the actuator is configured to drive a mass of liquid against an upstream portion of the enriched particle sample.

27. (Previously presented) The microfluidic device of claim 25, wherein a viscosity of the liquid of the mass of liquid is higher than a viscosity of the liquid of the particle-containing liquid.

28. (Original) The microfluidic device of claim 25, wherein a volume of the enriched particle sample is increased by no more than about 30% upon moving the enriched particle sample to the downstream region.

29. (Canceled)

30. (Previously presented) The microfluidic device of claim 19, wherein said lysing zone includes a positioning element to position the enriched particle sample in a lysing position with respect to the lysing zone.

31. (Currently amended) The microfluidic device of claim 19, wherein the lysing zone comprises a source of electrical energy to lyse the [[cells]] cells.

32. (Currently amended) The microfluidic device of claim 19, wherein the device further comprises a polymerase chain reaction zone configured to subject the enriched particle sample and a reagent to a polymerase chain reaction ~~to provide~~ thereby providing amplified polynucleotides.

33. (Currently amended) The microfluidic device of claim [[30,]] 32, wherein the device comprises a substrate and the enrichment zone and polymerase chain reaction zone are integral with the substrate.

34. (Withdrawn) A microfluidic substrate for processing fluids comprising: an enrichment zone for preparing an enriched particle sample from a cell-containing fluid, a lysing module, coupled to the enrichment zone for receiving the enriched particle sample and releasing intracellular material from cells within the sample to thereby forming a lysed sample a microdroplet formation module for forming a first microdroplet of fluid from the lysed sample, a mixing module for mixing said first microdroplet with a second microdroplet comprising a reagent to form a third microdroplet, and an amplification module for amplifying intercellular material within said third microdroplet.

35. (Withdrawn) A microfluidic system for processing fluids comprising: a microfluidic substrate comprising an enrichment zone for preparing an enriched particle sample from a cell-containing fluid, a gas actuator for providing a gas pressure, a first valve for coupling the enrichment zone to the gas actuator, a lysing module for lysing cells to release intracellular material, and a second valve for coupling the enrichment zone to the lysing module, and a control device for controlling the operation of the microfluidic substrate, wherein the control device controls fluid flow by i) closing said first valve to thereby block flow of fluid between the enrichment zone and the gas actuator, and ii) closing said second valve to thereby block fluid flow between the enrichment zone and the lysing module, and wherein the control device controls movement of the enriched particle sample by opening said first and second valves to allow said gas actuator to provide a gas pressure for moving the enriched particle sample from the enrichment zone to said lysing module.

36. (Withdrawn) A microfluidic network, comprising:

an input for introducing a cell-containing liquid to the microfluidic network;

an enrichment zone configured to receive cell-containing liquid introduced via the input;

a flow-through member in liquid communication with the enrichment zone and configured to allow liquid of the cell-containing liquid to exit the enrichment zone via a first pathway while retaining cells of the cell-containing liquid in the enrichment zone;

a channel leading downstream from the enrichment zone and defining a second, different pathway;

a valve having a normally closed state configured to obstruct downstream passage of cells of the cell-containing liquid from the enrichment zone and an open state configured to allow passage along the channel; and

a gas actuator configured to, when the valve is in the open state, move retained cells of the cell-containing liquid downstream along the channel.

37. (Withdrawn) A method, comprising:

introducing a cell-containing liquid to an enrichment zone of a microfluidic device;

preparing an enriched cell-containing liquid in the enrichment zone by steps comprising passing liquid of the cell-containing liquid through a flow-through member in liquid communication with the enrichment zone and retaining cells of the cell-containing liquid within the enrichment zone, the enriched cell-containing liquid comprising a greater concentration of cells than the cell-containing liquid;

opening a valve previously obstructing a channel extending downstream from the enrichment zone; and

subjecting the enriched cell-containing liquid to a gas pressure difference sufficient to move the enriched cell-containing liquid downstream of the enrichment zone without substantially diluting the enriched cell-containing liquid.